

CLAIMS

1. A rotating electric machine comprising:

a rotation axis extending along a first direction;

5 a first rotor for coupling with the rotation axis to
rotate together with the rotation axis;

a first stator disposed so as to oppose the first rotor;

and

a moving mechanism for moving the first rotor so that
10 relative positions of the first rotor and the first stator
are changed.

2. The rotating electric machine of claim 1, wherein,

the first stator opposes the first rotor while being
15 spaced apart therefrom along the first direction, and

the moving mechanism adjusts a gap between the first
rotor and the first stator by moving the first rotor along
the first direction.

20 3. The rotating electric machine of claim 2, wherein the

moving mechanism includes a moving member, and the moving member pushes the first rotor along the first direction to move the first rotor so as to be spaced apart from the first stator.

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4. The rotating electric machine of claim 3, wherein the moving member has a cylindrical shape having a throughhole, and the rotation axis is inserted in the throughhole.

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5. The rotating electric machine of claim 4, wherein the moving mechanism further includes a detent member for engaging with the moving member so as to prevent the moving member from rotating with the first rotor.

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6. The rotating electric machine of claim 5, wherein the moving mechanism further includes a bearing, and the moving member and the first rotor are in contact with each other via the bearing.

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7. The rotating electric machine of claim 5, wherein the

moving mechanism further includes a bearing provided between the moving member and the rotation axis.

8. The rotating electric machine of claim 7, wherein the
5 bearings are provided at least near both ends of the throughhole of the moving member.

9. The rotating electric machine of claim 2, wherein the moving mechanism includes an adjustment motor, and the gap
10 between the first rotor and the first stator is adjusted by converting rotation of the adjustment motor into a displacement along the first direction for moving the first rotor along the first direction.

15 10. The rotating electric machine of claim 9, wherein the adjustment motor includes a second rotor having a throughhole; the rotation axis is inserted in the throughhole of the second rotor; and the second rotor rotates around the rotation axis.

11. The rotating electric machine of claim 5, wherein,
the moving mechanism further includes an adjustment
motor;

the adjustment motor includes a second rotor having a
5 throughhole in which the rotation axis and the moving member
are inserted;

a side face defining the throughhole has a thread; and
an outer side face of the moving member has a thread for
meshing with the thread on the inner side face of the second
10 rotor.

12. The rotating electric machine of claim 11, wherein
the rotation axis penetrates through the second rotor of the
adjustment motor, and has an end portion which is supported
15 by a bearing.

13. The rotating electric machine of claim 2, wherein
the rotation axis and the first rotor are coupled via
serrations, and the first rotor is slidable with respect to
20 the rotation axis along the first direction.

14. The rotating electric machine of claim 5, wherein
the first stator has a space provided near the rotation axis,
and at least a part of the moving member is located in the
5 space.

15. The rotating electric machine of claim 2, wherein
the first rotor has a plate shape having a recess near the
rotation axis, the recess being depressed in the axial
10 direction.

16. The rotating electric machine of claim 15, further
comprising:

a driving axis disposed coaxially with the rotation
15 axis; and

a transmission for converting and transmitting a rotation
speed of the rotation axis to the driving axis,
wherein at least a part of the transmission is inserted in
the recess of the first rotor.

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17. The rotating electric machine of claim 16, wherein the transmission is a speed reducer, the speed reducer including:

a sun gear provided on the rotation axis;

5 a ring gear; and

a planet gear rotating around a rotation axis affixed to the driving axis, and orbiting around the driving axis by being meshed with the sun gear and the ring gear.

10 18. The rotating electric machine of claim 16, wherein the transmission and the moving mechanism are disposed so that the first rotor is interposed therebetween.

19. The rotating electric machine of claim 7, further
15 comprising a driving circuit for generating a magnetic field in the first stator,

wherein the first stator includes a plurality of coils which are disposed along a circumference while leaving a space therein, and the driving circuit is disposed in the
20 space in the circumference.

20. The rotating electric machine of claim 11, wherein the rotation axis and the first rotor are moved integrally by the moving member.

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21. The rotating electric machine of claim 20, further comprising a driving axis disposed coaxially with the rotation axis,

wherein the rotation axis and the driving axis are
10 coupled via serrations, and the rotation axis is slidable with respect to the driving axis along the first direction.

22. An electric vehicle comprising:

a rotating electric machine defined in any of claims 1
15 to 21; and
a tired wheel driven by the rotating electric machine.

23. A two-wheeled vehicle comprising:

a rotating electric machine defined in any of claims 1
20 to 21; and

a tired wheel driven by the rotating electric machine.

24. An electric vehicle unit comprising:

a rotating electric machine defined in any of claims 1

5 to 21; and

a tired wheel driven by the rotating electric machine.